A NOVEL SPECIES OF *VOLUTIDAE* FROM NORTHWESTERN AUSTRALIA

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ABSTRACT :
A novel species of the family *Volutidae* , *Cottonia joerinkensi* is described.

KEY WORDS : *Gastropoda* - *Volutidae* - *Cottonia joerinkensi* - n.sp.
MOTS CLEFS : *Gastropoda* - *Volutidae* - *Cottonia joerinkensi* - n.sp.

INTRODUCTION :
The shrimp boats operating off the northwestern coast of Australia continue to trawl new species of deep-water *Volutidae*. After *Teramachia dupreyae* Emerson, 1985, *Teramachia dalli claydoni* Poppe, 1986 and *Amoria rinkensi* Poppe, 1986, a new species of *Cottonia*, described hereunder, has been discovered.

Cottonia joerinkensi n.sp.

TYPE MATERIAL :
The holotype is in the Koninklijk Belgisch Instituut voor Natuurwetenschappen : type number 434. The paratype is in the G.Poppe collection.

TYPE LOCALITY :
120 Km. off Mermaid, into the direction of Scott Reef, 430 Km. north of Broome, Western Australia.

RANGE :
Known only from the type locality.

HABITAT :
Both specimens were trawled at a depth of 470 m., on a silty, rubbly bottom, together with glass sponges and prawns.

DIMENSIONS :
Holotype : height, 238 mm.; width, 106 mm.
Paratype : height, 214 mm.; width, 94 mm.

SHELL CHARACTERISTICS :
The large but fragile shell is low spired so that the last whorl covers about 8/10 of the shell length. The protoconch is "deciduous" (i.e., according to Weaver and duPont (p. 125): "breaking off at an early age to form a laterally positioned, ragged-edged, oblique peak at the line of separation.").
Exceptionnally, the paratype has still an almost perfect protoconch (not yet broken off): bulbous, large and fragile. (See under "Remarks").
The three and a half to four teleoconch whorls are only slightly shouldered and a little concave below the deep suture. From the second half of the first teleoconch whorl, appear broad, wavy shaped axial ribs. They are well developed upon the spire whorls and the posterior part of the last whorl but disappear near the lip. Both specimens have 10 to 11 of these axial ribs on the second and third whorls.

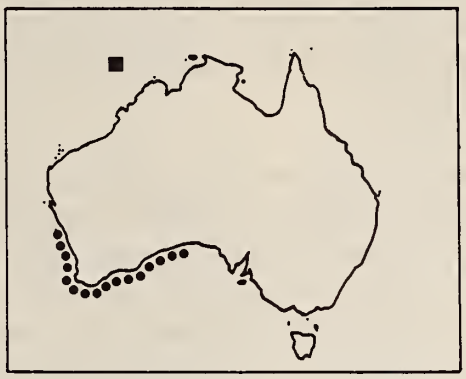
The posterior part of the teleoconch whorls is covered with fine, irregularly spaced, but clearly visible, spiral lirae. The outer lip (only present in the paratype) is thickened and reflected.

The columella bears three oblique plaits. In the paratype traces of a tin glaze that covered the columella and parietal area are still visible.

The two single known specimens have been dead collected. They are white colored and have no pattern. Nothing suggests that the shells were differently colored when the animals were still alive.

COMPARISON :
Shell shape and protoconch leave no doubt as to a close relationship with the formerly single known species in the genus : *Cottonia nodiplicata* (Cox, 1910).
C. joerinkensi differs from this species by its smaller size, the more fragile shell, the shape of its whorls, the more rounded shoulder, the presence of developed axial ribs, the more pronounced spiral lirae on the posterior part of the whorls and the less angular parietal wall. The dark colored and pronounced tubercles found on the shoulder of *C.nodiplicata* are absent in *C.joerinkensi*. (Compare figs.8 and 9). *C.joerinkensi* is completely white colored while *C.nodiplicata* is always brown-orange and patterned on the outside of the last whorl.

C.nodiplicata is known from the southern and southwestern coasts of the Australian continent only and a long distance separates its most northern range limit from Scott Reef (See map). It also lives in more shallow water, the deepest records going down to 200 m. only. Some specimens were taken by skin divers.



Map : Type locality of *Cottonia joerinkensi* n.sp.
Range of *Cottonia nodiplicata* (Cox,1910).

REMARKS AND POSITION IN THE FAMILY :

The genus *Cottonia* Iredale, 1934 differs from all other genera by its deciduous protoconch. Only a few specimens of *C.nodiplicata* with an intact protoconch are known : one of these has been figured by the late F.Abbottsmith in *La Conchiglia* (1982). This author also observed the explosion of a protoconch just after a shell was brought above the surface level on board of a ship. The difference of pressure between the biotope and the sea level may explain this explosion. No information is available as on what fills the protoconch : a liquid, a gas or a mixture of these. It is certain that the protoconch is deciduous : most shells, even the young ones, lost it already during their lifetime. They formed a septum to close off their shell. It is unknown if the septum is formed before or after that the protoconch breaks off. (See figs. 13 and 14).

The paratype of *C.joerinkensi* has a protoconch with a small hole on its top : pressure could escape through this opening while the shell came up from a depth of 520 m. Collecting such a specimen has to be regarded as exceptional, especially when observing that this tennis-ball shaped protoconch is so thin and fragile (See fig. 7).

Weaver and duPont placed the genus *Cottonia* in the subfamily *Zidoninae*.
The conchological relationship between *Cottonia* and *Livonia* Gray, 1855 is evident: in *Livonia mamilla* (Sowerby I, 1844), the protoconch has about the same size as in the *Cottonia*-species, but it lies more sunken into the spire, protecting it from breaking off (or becoming deciduous). Both in *Livonia mamilla* and the *Cotto-*

nia-species the line of separation on the protoconch is paucispiral. *Livonia roadnightae* (Mc Coy, 1881) differs, among other characteristics, from *Livonia mamilla* by its smaller and much more solid protoconch : it forms in this way a link to the genus *Ericusa* with still large protoconchs -but not so gigantic as in *Livonia*) in which the line of separation becomes more and more multispiral. (Compare figs 8, 9 and 10).

The genera *Cottonia* and *Livonia* both have species with an indistinct fasciole, their protoconchs and last whorls are large, both have a clear siphonal notch and a fine periostra cum is present in the species that have been collected very fresh or alive. These reasons refer *Cottonia* to the subfamily *Fulgorarinae* as it is understood by Weaver and duPont. The deciduous protoconch seems to be sufficient to maintain *Cottonia* as a genus, and not as a subgenus of *Livonia*, as earlier suggested (Poppe, 1987).

The species is named in honor of Mr.Joe Rinkens, for sending both type specimens for study and description. It is among others, one of his many contributions to the Australian deep-water molluscs knowledge.

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CITED BIBLIOGRAPHY :

ABBOTTSMITH, F., 1969 - Multiform Australian Volutes, *Cottonia nodiplicata*,p.38.
ABBOTTSMITH, F., 1982 - *La Conchiglia*, Year XIV,N°154-155, p.13 and cover.
PILSBRY, H.A. and A.A.OLSSON, 1954 - Bulletins of American Paleontology, Vol.35, N°152.Systems of the Volutidae
POPPE, G.T., 1987 - New Volutes since 1970, Parte I, *La Conchiglia*, Year XIX, N°218-219 May-June, p.8-22.
POPPE, G.T., 1987 - New Volutes since 1970, Parte II, *La Conchiglia*, Year XIX, N°220-221 July-August, p.20-27.
WEAVER, C.S. and J.E.DUPONT, 1970 - The Living Volutes. Delaware Museum Nat. Hist., p.124-125, pl.54.

PLATE I

1-2 : *Cottonia joerinkensi* n.sp.

3 : *Cottonia nodiplicata* (Cox, 1910)
135 fathoms deep off Cape Leeuwin, W.Australia, nov.1985.- 350 mm.

4-6 : *Cottonia joerinkensi* n.sp.
Paratype.

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PLATE II

7 : *Cottonia joerinkensi* n.sp.
Protoconch and first whorls of the paratype.

8 : *Cottonia joerinkensi* n.sp.
Protoconch (deciduous) and first whorls of the holotype.

9 : *Cottonia nodiplicata* (Cox, 1910).
Protoconch (deciduous) and first whorls.

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PLATE III

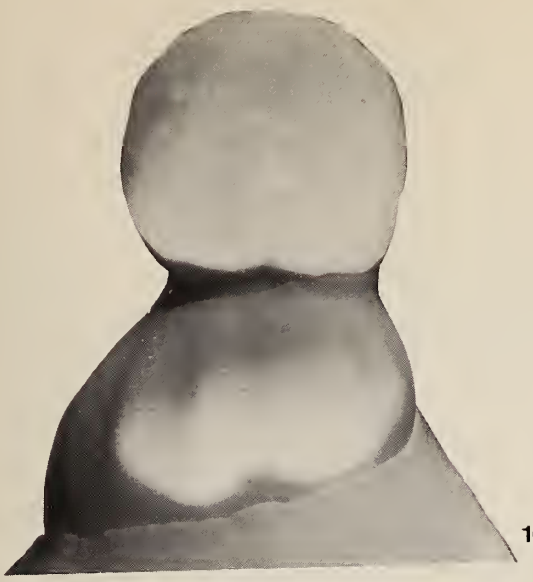
10 : *Cottonia joerinkensi* n.sp.
Protoconch of the paratype.

11 : *Livonia roadnightae* (Mc Coy, 1881).
Protoconch.

12 : *Livonia mamilla* (Sowerby I, 1844).
Protoconch.

13 : *Cottonia joerinkensi* n.sp.
Deciduous protoconch of the holotype.

14 : *Cottonia nodiplicata* (Cox, 1910).
Deciduous protoconch of a young specimen.



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